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Where in the Arboretum?

Cover:
'Ruby Glow'
Witch Hazel

Golden fall leaves infused with red are just a warm-up for *Hamamelis* 'Ruby Glow', whose sweet-smelling red flowers are worth seeking out in winter. Witch hazels lend year-round beauty to sunny or lightly shaded areas. Find 'Ruby Glow' on the arboretum map in 35-1E near Azalea Way. Other witch hazels are in the Witt Winter Garden and in the Japanese Garden.—*Photo by Joy Spurr*

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The Arboretum Foundation is a nonprofit organization that was chartered to further Washington Park Arboretum development, projects, and programs through volunteer service and fund raising. Its mission is to ensure stewardship for the Washington Park Arboretum, a Pacific Northwest treasure, and to provide horticultural leadership for the region. This stewardship requires effective leadership, stable funding, and broad public support.

Washington Park Arboretum (WPA) is administered cooperatively between the University of Washington, its Center for Urban Horticulture (CUH), and the City of Seattle Department of Parks and Recreation. The programs and plant collections are a responsibility of CUH.

WPA is a living plant museum emphasizing trees and shrubs hardy in the maritime Pacific Northwest. Plant collections are selected and arranged to display their beauty and function in urban landscapes, to demonstrate their natural ecology and diversity, and to conserve important species and cultivated varieties for the future. The Arboretum serves the public, students at all levels, naturalists, gardeners, and nursery and landscape professionals with its collections, educational programs, interpretation, and recreational opportunities.

This drawing was created by a student inspired by Washington Park Arboretum's Branching Out program. See page 15 for more about activities for youth and families.

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Where you see this symbol, discover more about Washington Park Arboretum.

Joy Spurr

Nyssa sylvatica in the Arboretum.

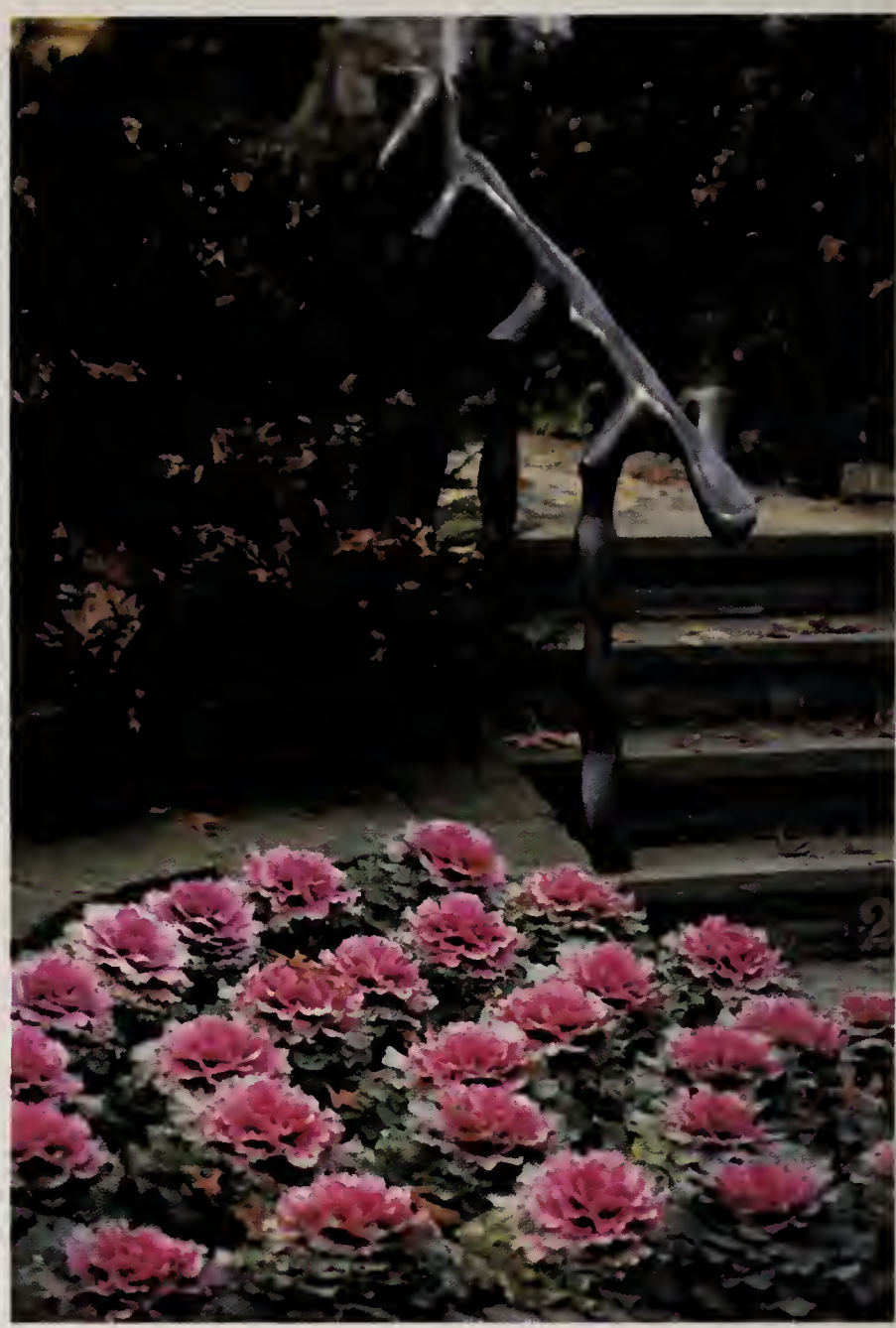
Best Annuals for the Pacific Northwest

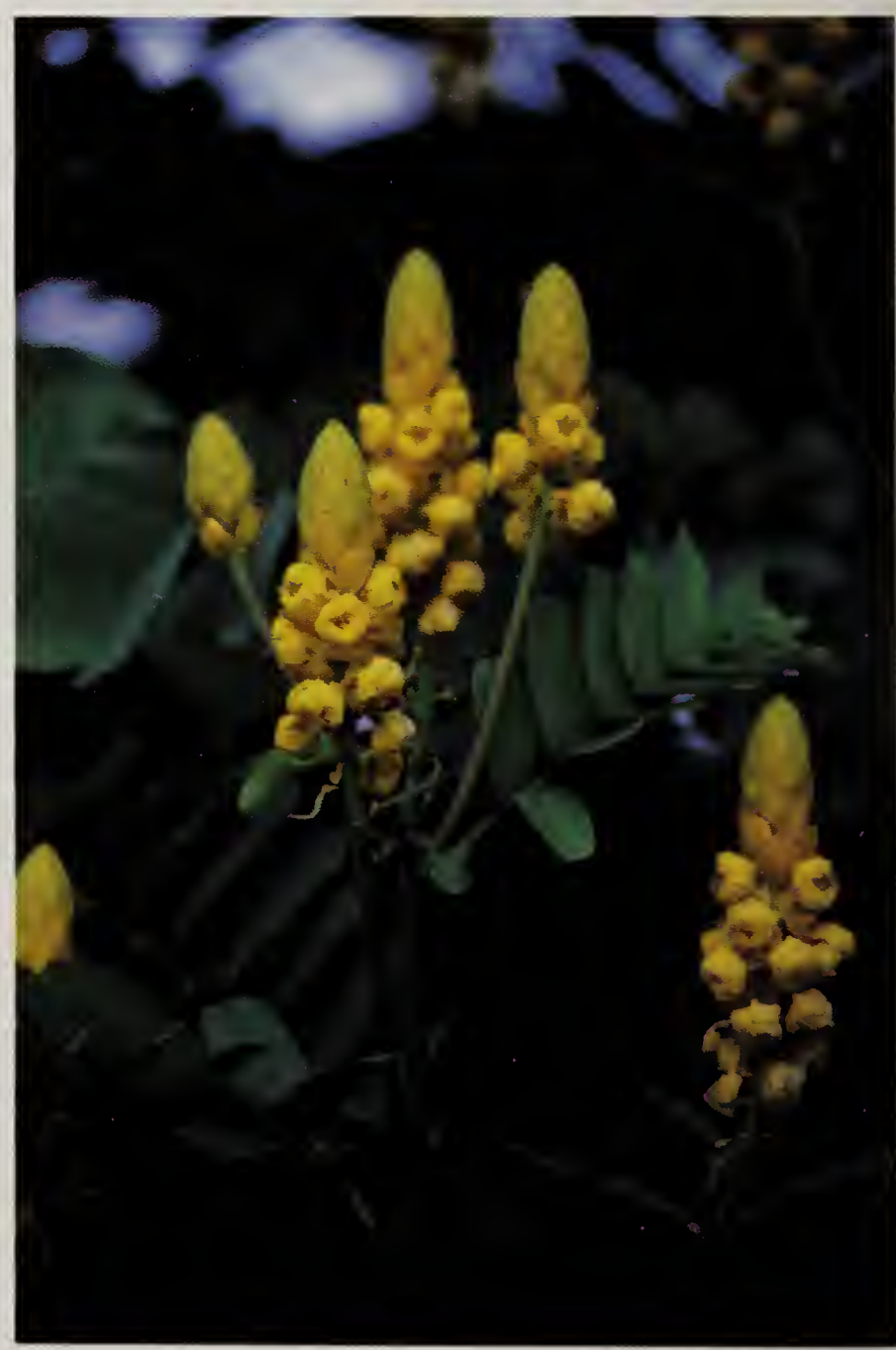
No plant is too common to use well.

PHOTOS & TEXT BY RICHARD W. HARTLAGE

What is an annual? Most people are referring to plants that are short-lived and seasonal—usually plants that are purchased to jazz up the garden in spring and summer. Many, however, do not know if they are growing a true annual or a tender perennial. What is the difference?

An annual is a plant, such as a zinnia, that is programmed to live out its life cycle in one or two seasons. For example, zinnias germinate when the soil is warm, grow to flowering size quickly, flower, and then die in late summer or early autumn. On the other hand, impatiens are actually tender peren-





ABOVE:
Tropaeolum majus 'Margaret Long'.
UPPER RIGHT:
Ornamental cabbages.
RIGHT:
Senna alata.

nials, meaning that they would live for more than a season if there were no frost or freezing temperatures.

For most gardeners, flowers are of primary interest when selecting annuals. Common examples include impatiens, geraniums, and pansies. Annuals often are considered to be vulgar, such as hot pink petunias in a tire planter or a double sentry of coleus lining the front walk. Red salvias are another plant with a stigma, though Gertrude Jekyll featured them in her long border at Munstead Wood. But remember: No plant is too common to use well.

An arrow in the quiver is how I think of annuals. When I look at the range of tender perennials and annuals I grow and use, their foliage is the primary selection criterion. I like flowers, but at the Miller Botanical Garden and for my few private clients, I like to use plants with fantastic leaf shapes, sizes, or colors—mostly tropical plants that are actually tender perennials.

I use tender plants and annuals in two primary ways: as accents and to create dramatic impact. They are great to fill in holes in plantings of shrubs and hardy perennials or to steal the show when planted *en masse.*

The short lives of tender perennials are not a detriment but an asset. I plan areas that will be given to these plants when I am designing the garden, with the intent that they will change from year to year. The garden is never static, so take advantage of the potential to create totally new experiences within the same space from year to year. There is no substitute for good garden architecture and no fancy tricks with tender plants to cover up poor structure. For me, annuals are the icing on the cake when making a great space.

The Signature Bed in front of the Graham Visitors Center (see page 6), which we filled full of annuals this year, can never overshadow the great collections of woody plants and monumental spaces created by the Olmsteds as they laid out the arboretum. But they are fun and engaging and complement the place as a whole. All things are great in moderation, including annuals: Do not take them too seriously and have some fun, because you only live with them for one growing season.

I have many favorites, for example a silver star-fish! *Echium wildprettii* is actually a biennial from the Canary Islands, but it is not hardy nine out of ten years here in Seattle. I love these silver pinwheels as accent on the dry hillside at the Miller Garden. I like them to reach about 3 feet across; therefore, I sow seeds in August and grow them to gallon size. Then I winter them in the cold frame so that I have reasonable-sized plants to work with the next spring. I love this plant and hate to see a hard freeze dismember it, yet I take solace in knowing next summer's plants are being readied.

Another silver plant that looks like a substantial Dusty Miller is *Centaurea depressa,* which was used in the 1998 Signature Bed. Great mounds of cut foliage are the perfect foil to anything but are especially dramatic against a dark background, such as purple barberries, or other tender perennials, such as purple fountain grass, *Pennisetum setaceum* 'Atrosanguineum'. The *Centaurea* is propagated from cuttings, in late August, so that I have a stock plant to take cuttings of in early spring. I do not bother saving the fountain grass because it is readily available.

I adore dark purple foliage because it gives great depth to the garden and acts as a base note. Dark-leaved coleus are perfect, and my favorite is 'Purple Emperor', whose frilly leaf margin resembles the self-sowing annual perilla. 'Inky Fingers' is another favorite, with leaves looking like ink-stained monkey paws, which makes them excellent filler in the mixed border or in a container planting. Coleus were wildly popular with the Victorians, so the new craze is only a rehashing of an old fad. However, what fun to rehash with such great colors and leaf shapes.

If your tastes lean towards the sunny side of life, try yellow- and cream-striped *Cordyline australis* 'Albertii'. A favorite plant for containers, it also can be planted out in the garden for the summer to create a flare of gold that enlivens an otherwise lumpy assortment of shrubs. To brighten any spot, try the sunny yellow of 'Lime Frills' coleus or, for the winter, try combining pansies with the new 'Rainbow' Swiss chard. In September and early October, sow their seed directly where you want them to grow. Plant more than you need by triple, and cull out the colors you do not want because the seeds germinate in a mix of yellow, orange, red, pink, and white stems. I love the yellow and orange, which appear least frequently. While we are on the subject of crucifers for fall, I think ornamental cabbages and kales get a bad rap. I use them in clients' gardens in big, thickly planted sweeps. They look great.

One of the quaintist flowers I have grown recently is the annual bed-straw, *Asperula orientalis;* picture sweet woodruff in powder blue.

Sow it where you want it to be, in a pot or in the ground, as it is too delicate to transplant happily yet germinates easily. *Asperula orientalis* is sweetly delicate and never goes without notice when we have visitors to the garden. I grow it in pots but have seen it threaded through a mixed border. It usually starts flowering in July for us if we plant it in late May or early June and goes here until mid-October. To keep it blooming later in the season, do not sow the seeds until late June or early July, and that goes for other seed-grown annuals such as nicotiana, cosmos, zinnias, and amaranths. If you take this tack, your garden will look fresh when everyone else's are fading. *Cerinthe major* is a great example. It looks terrible in late summer, so start several crops on two-week intervals if you want to grow the plant and keep it looking good all season.

New on the scene and kind of a pain to grow is the double-peach nasturtium, *Tropaeolum majus* 'Margaret Long', which is the sport of the double-red nasturtium, 'Hermine Grashoff', and both are lovely. The double-golden selection released by Heronswood, 'Darjeeling Gold', is doubly more vigorous than the aforementioned two.

Another seed-grown annual I have been dying to try is *Senna alata*. I saw it last year in Columbia, South Carolina, at Riverbanks Botanical Garden, and was bowled over. Picture 12-inch spikes of school bus yellow pea-like flowers on 10-foot plants. I do not know if we get enough heat to grow them, but it would be worth a try.

That brings me to another point when it comes to annuals and tender perennials: Experiment. Some really great plants are out there, so try as many as you can and some real gems will show up that you use every year. The echiums were an experiment for me, and I cannot imagine a year without them now.

So have fun using annuals and tender perennials in your garden. Whether your interest is foliage or flowers, there are many with which to create dramatic impact or just to fill in an unexpected hole. Comb the nurseries and see what you can turn up.

Richard W. Hartlage, member of the *Bulletin* editorial board, is Executive Director of the Elisabeth Miller Garden, in North Seattle. Reach Richard at 206-362-8612; PO BOX 77377, Seattle, WA 98177. (millergarden@compuserve.com)

Left: Coleus 'El Brighto' at Heronswood Nursery, Kingston, Washington.

Architecture for the Outside

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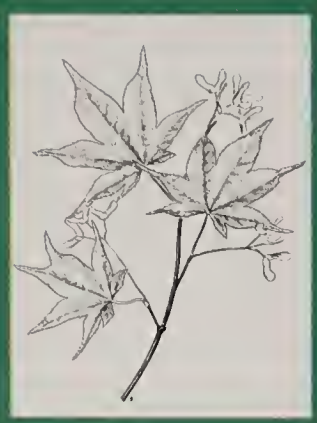


Where in the Arboretum? Graham Visitors Center's Signature Bed

by Deborah Andrews,
Executive Director
The Arboretum Foundation

Photos by Richard Hartlage

The Washington Park Arboretum welcomes you in many ways. One way is The Signature Bed, a raised-bed display garden created, designed, planted, and maintained by volunteers. You'll see it at the main entrance to the Graham Visitors Center, on Arboretum Drive East. The imaginative and intriguing garden displays are freshened twice yearly by each participating group, to help you enjoy plants while learning more about them.

The 1998 mid-year bed, entitled the "Bold and the Beautiful," was designed by Richard Hartlage, Executive Director of the Elisabeth Miller Garden, with the cooperation of the Arboretum Foundation's Myrtle DeFriel Unit 16. The garden's exotic plants both enliven the stone bed and hang in terra-cotta pots, which add color and a contemporary design to both the bed and the arbor surrounding the Visitors Center. Though the bed changes hands soon, the unusual pots are here to stay. Unit 16, The Arboretum Foundation, the Miller Garden, and the Elisabeth and Pendleton Miller Charitable Trust sponsored the work.

ABOVE:
The 1998 signature bed was designed by Richard Hartlage, using hanging conical planters designed by Hartlage and constructed by Mathie Pottery and Riverhorse Ironworks. The planters weigh 100 pounds empty.

UPPER RIGHT:
Rainbow chard is an annual that added fun to last winter's bed.

LOWER RIGHT:
One of the new hanging baskets in early fall.

Gerald Straley at the University of British Columbia. Photo by Judy Newton

Gerald Straley's Horticultural Legacy
1945-1997

BY DANIEL J. HINKLEY

Gerald Bane Straley grew up in the botanically rich mountains of Virginia. His early interest in plants ultimately led him to a life devoted to the understanding of the world's flora—a process he undertook with great passion, a sensitive eye, and a marvelous ability to convey the excitement he felt to the legions of students, associates, and friends he encountered along the way.

With a bachelor's of science degree earned in Ornamental Horticulture from Virginia Polytechnic Institute, Gerald went on to Ohio University to receive his master's of science in Botany in 1976. Shortly thereafter, he began study for his doctoral dissertation on the genus *Arnica* at the University of British Columbia (UBC), which he completed in 1979. After three years as Education Coordinator at VanDusen Botanical Display Garden, Gerald was hired as Curator of Collections and Reasearch Scientist at the UBC Botanical Garden, a post he held until his death last December.

Gerald was a prolific writer, co-authoring *Vascular Plants of British Columbia* and *Flora of the University of British Columbia Endowment Lands.* His award-winning *The Trees of Vancouver* was a pet project, and I recall several instances, during visits to Vancouver, of driving the streets in search of a rumored tree species he had heard might exist—an adventure made all the more enjoyable by interjections of his dry wit and humor.

In May 1997, Gerald was awarded the Significant Achievement Award from Ohio University, honoring alumni who have distinguished themselves in their field. The award stated that Gerald "represented the very best of what we hope for our graduates."

I cherish the numerous opportunities I had to spend time with Gerald—in the field as well as during walks through the UBC Botanical Garden. His eyes focused on the intracacies and marvels of nature that so many of us walk past and do not see. Time and again, I would leave his company feeling gratitude for what I learned in his presence. During my last visit with him, though he was extremely ill, Gerald asked to look at the small bouquet of plants I had brought him from my garden. He went through them one by one, and I could sense the flood of memories and emotions conjured by each as he held and observed them. Though Gerald is now gone, his presence is inextricably entangled with nearly every plant I encounter in my garden and in the wild.

Lecturer and author Daniel J. Hinkley co-owns Heronswood Nursery, Ltd., Kingston, Washington.

Gerald Straley's final contribution to the Bulletin starts *on page 8.*

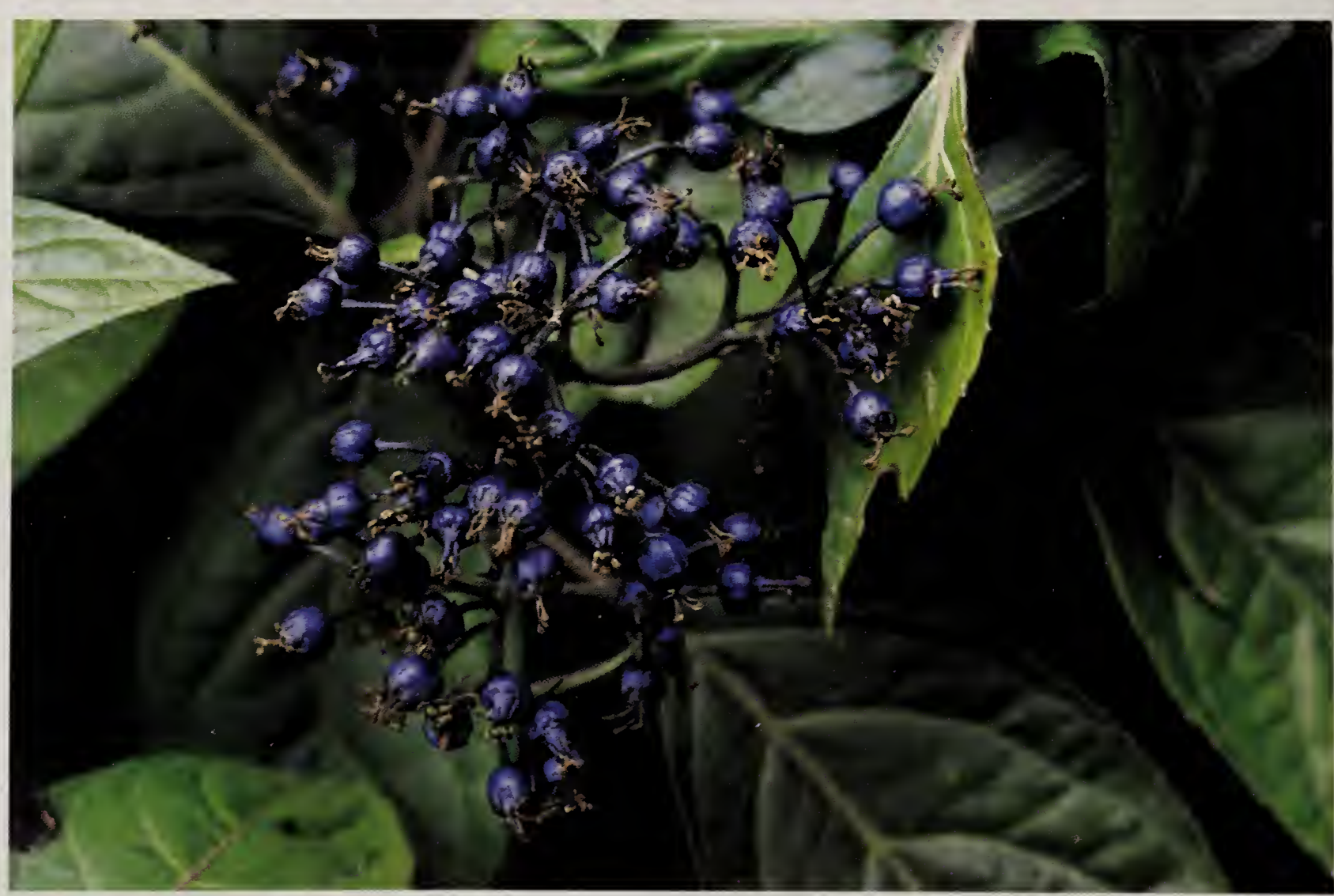
A Charming & Surprisingly Hardy Hydrangea Relative

Dichroa febrifuga

BY GERALD B. STRALEY

At the University of British Columbia Botanical Garden, we always look for new plants to include in the Plant Introduction Program. All too often, potentially promising

Dichroa *flowers. Photo by Gerald Straley*



By late October, the pea-sized fruits of Dichroa *turn this vibrant blue. Photo by June West*

plants are deleted from our list of potential candidates or put on the back burner because they are difficult to propagate at a level sufficient for profitable commercial production. A typical example of this is the beautiful Chinese vine, *Holboellia fargesii.*

So, it is rewarding when a new or unusual plant turns out to be easily propagated. Such is the case with a little-known evergreen shrub, *Dichroa febrifuga.* It has the appearance of a refined common *Hydrangea macrophylla,* to which it is related, but is easily characterized by its fleshy fruits.

Our original plant was grown from seed received from Castle Howard in York, England, in 1988. It is now about 3 feet tall and 8 feet across. The opposite pairs of broadly lance-shaped leaves are 4–6 inches long, slightly smaller and narrower than those of its hydrangea relative.

All the flowers are fertile and are produced in flat-topped or rounded terminal panicles on the tips of most of the new growth of the current year. The 5–6-petalled flowers begin to open about mid-July and peak about a month later. By late October, the pea-sized fruits turn a vibrant, shiny blue, of a color and size similar to the fruits of *Viburnum davidii.* The tendency for the dried flower parts to remain attached at the top of some of the fruits may detract slightly from the fruits. Leaves and fruits may be held on all winter during mild years, or be blackened and drop after quick, hard freezes.

We have plants in full sun, where they tend to sunburn in summer, even in the Pacific Northwest, but also in high filtered shade, which they definitely prefer. They like a humus-rich, fairly moist soil. I do not know if anyone has tried this shrub in neutral or alkaline soil to see if the flowers and fruits might change to pink as they do in *Hydrangea macrophylla.*

Pruning is not generally needed, but the plants may be lightly pruned in spring to keep them to a desired height.

All *Dichroa* are native to southeastern Asia. Most are probably not at all hardy, except in the warmest parts of the United States. In cooler climates, they have potential as cool greenhouse or conservatory plants. *Dichroa febrifuga* is native to a wide range from Nepal to southern China, where it has been used for centuries to treat fevers, hence the specific name *febrifuga* (to purge fevers).

The species is extremely variable in size, habit, and hardiness. A number of specimens in the San Francisco area, especially Strybing Arboretum, stand 6 feet tall and look very different from our clone. We have been surprised at the hardiness of the UBC plant, which has withstood the last eight winters unscathed in Vancouver.

Propagation is extremely easy using young, non-flowering shoots in summer. Someone even suggested that the cuttings only had to be in the same room with the rooting media for them to root! They usually flower the first year after propagating. In the United States, this species can be purchased at Heronswood Nursery, Kingston, Washington.

The late Gerald B. Straley was Research Scientist & Curator of Collections, The University of British Columbia Botanical Garden, Vancouver, British Columbia, Canada.

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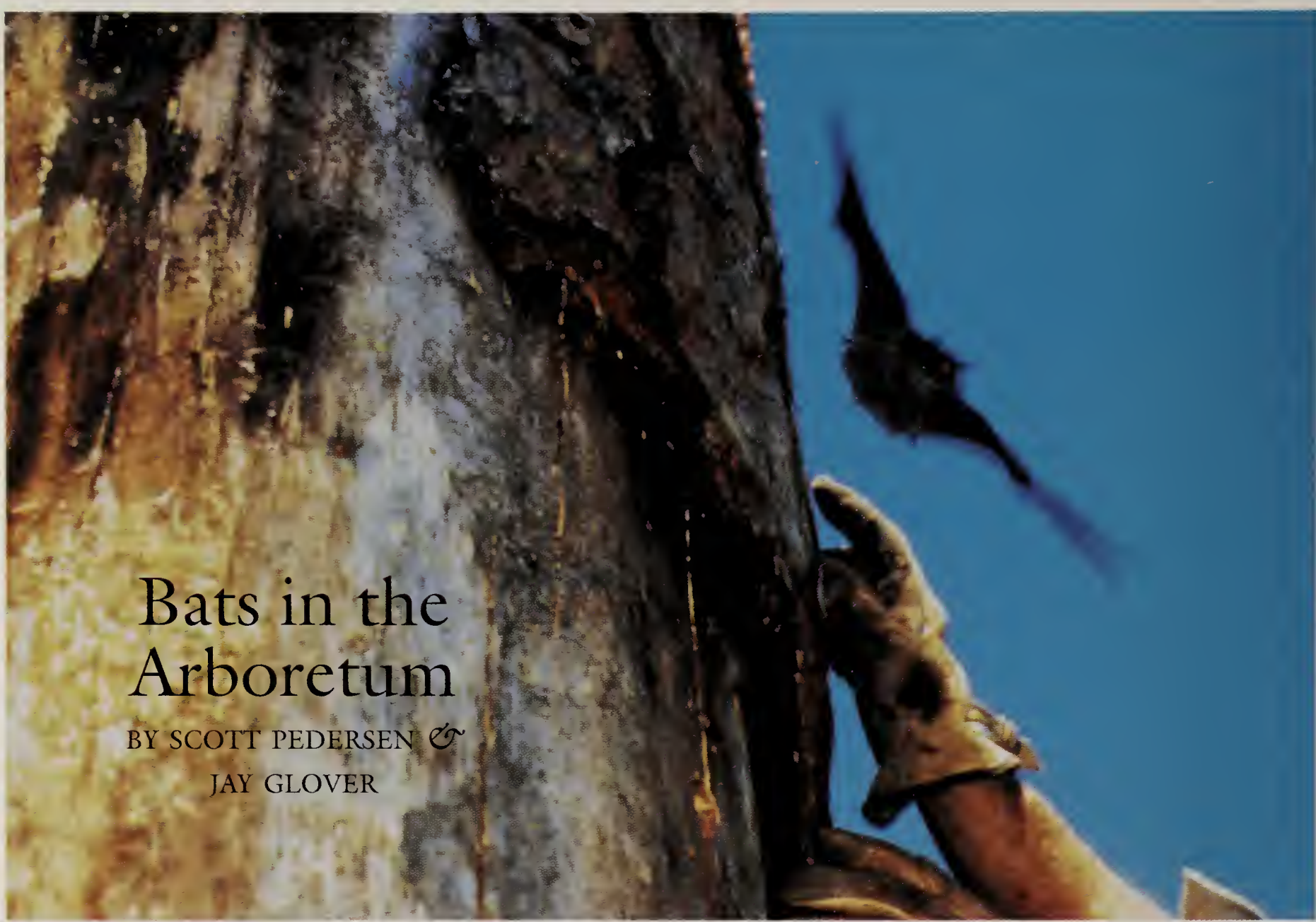

Tim Brown

Bats in the Arboretum

BY SCOTT PEDERSEN & JAY GLOVER

The big brown bat, Eptesicus fuscus *(above), can be seen flying over the canopy at the Arboretum. Two bats of the* Myotis *species (opposite page) are studied before their release.*

We've all heard that bats are blind, rabies-infected flying vermin, and that they infested the Washington State governor's mansion in 1997. But the first three things are not true: They are not blind, they are more closely related to primates than to rodents, and the incidence of disease (rabies) in wild bats is exceedingly low. These small mammals are unmatched predators of night-flying insects (many of which are pests to humans), and are prey for higher-level carnivores (e.g., owls), thereby providing an important link in the food web. Bats are fascinating creatures that are critical components of a balanced ecosystem.

The two of us spent summer 1997 documenting which species of bats are present, the availability of roost sites, and foraging patterns of bats in Seattle's Washington Park Arboretum. Such studies concerning the status of bat populations in our area are critical—of the eight species thought to occur in the arboretum, one is on the federal list as threatened/endangered, while the other three are being monitored by the State of Washington.

Our research involved the capture of bats using large (45' long x 12' high) mist nets stretched over ponds, streams, and walking trails where they forage for insects. Nets were erected approximately an hour before dark during each evening of the study. Captured individuals were identified to species, weighed, sexed, checked for reproductive condition and overall health (such as ectoparasites), and immediately released. No animals were injured during the study; all captured animals were in good physical condition, and none were pregnant or lactating.

We were struck by the low levels of activity in the arboretum and how few species we found. In fact, the only species we caught was the little brown bat *(Myotis lucifugus)*. It is quite possible that we also may have caught several members of its sister species, the Yuma myotis *(Myotis yumanensis)*, but these species are extraordinarily difficult to distinguish from each other in this part of their range, and they might even interbreed. Though we did not capture them, we noted several big brown bats *(Eptesicus fuscus)* foraging high overhead above the canopy on several evenings. We identified them as *Eptesicus*, because their flight pattern and body size are unmistakable.

Brown bats are common neighborhood bats found throughout the United States. Upon leaving their day-roosts, they stream towards a water source to rehydrate. Many of our early captures were bats heading towards the arboretum's lagoon area for a drink. The bats would then fly around within a meter of the water's surface, picking up small insects in mid-air. After the lagoon had been cleared of insects, the bats moved on to forage throughout the arboretum, or would go hang-up and digest their meal of 200–300 small insects. A second round of activity over the lagoons would occur several hours after the initial feeding activity—the time it takes for bats to digest their first meal of insects.

We often captured bats deep in the wooded areas of the arboretum, but this activity was always quite low in terms of the numbers of bats captured. The patterns that we noticed can be influenced by a great number of factors including: competition with other bat species and among age-groups within a species, temporal distribution of insects, nutritional demands and variety, weather patterns, or even the activity of their predators, though we did not see any owls.

Fortunately for the bats, fragmentation of habitat—the urban mosaic—has affected biodiversity in bat populations in at least one positive manner. In contrast to large tracts of uninterrupted forest monoculture, fragmented habitats tend to concentrate insects along edges, thereby benefiting foraging bats. Another positive effect of humans on bat populations is the addition of lights, which also tend to concentrate insects, namely moths. It has been shown that bats tend to roost near light sources and exhibit great lamp-post-fidelity in their nightly foraging bouts. We found it unusual that arboretum bats were not utilizing the street lights where insects congregated in great numbers.

Dead trees also provide tremendous wildlife habitat under loose bark, in hollows, and under fallen woody debris. Because roost sites are the most important ecological limiting factors to bats, the identification of roost-site locations (possible colonies) within the arboretum was an essential first step in understanding the arboretum's bat population.

Given the highly manicured nature of the Washington Park Arboretum, the area is relatively poor habitat for bats and many other cavity-nesting species because of the relative lack of large woody debris—standing or otherwise. In fact, we found no trees on the property that could function as permanent maternity roosts. Similarly, we were unable to document bat-occupation of the few snag-trees in the lagoon area that might have sufficed as temporary night-roosts. Apparently, the arboretum's bats live in surrounding neighborhoods and commute each evening into the arboretum for a bite to eat.

As mentioned previously, bats are important components of an ecosystem. Because the predominant cause of decreasing bat populations worldwide is human disturbance and the destruction of roost sites, it would greatly enrich the

Brock Fenton

Myotis *in flight. Photo by Brock Fenton.*

habitat and biodiversity of all animals within the arboretum to establish wildlife habitat within living trees. In addition—or as an alternative—it would be useful to construct roosting habitats that are low impact and low visibility.

If you are interested in observing the arboretum's bats, come down to the lagoons around dusk (July and August are best), and position yourself so that you can see a patch of sky and its reflection in the water. Against this backdrop, bats can easily be seen flying across the water's surface for about 30 minutes. You can count the numbers of insects eaten simply by counting the number of zigs and zags each bat makes as it flies along.

If you would like to learn more about bats, Bats Northwest (BNW) is a non-profit bat conservation group based in Seattle, Washington. Like other small conservation groups, its primary goals are to educate people about bats and to protect bats and their habitat in the Pacific Northwest. BNW contributes information to local schools and community groups, and conducts public bat-walks throughout the summer around Green Lake Park. Contact BNW by writing 4742 42nd Ave. SW, Seattle WA 98116, or calling 206-256-0406.

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Scott Pedersen is an NIH post-doctoral Fellow in the Department of Orthodontics, UW. In addition to the arboretum, his other field site for bat research is the once lush, now devastated, volcanic island of Montserrat in the British West Indies.

Educational consultant Jay Glover has a BS in Anthropology and an MEd in Educational Technology. Her fascination with bats began during a trip into the cloud forests of Costa Rica.

Gardening with the Miller Library

Most Asked Questions about Fall

BY BRIAN THOMPSON

Every year, the Elisabeth C. Miller Horticultural Library answers over 10,000 questions about Northwest horticulture.
If you have a question for the library staff, call 206-543-0415 or e-mail it to:
hortlib@u.washington.edu

Q: I've seen many different types of apples on the market this year. How do I decide which to grow?

A: In *Apples for the Twenty-First Century* (Portland, OR: North American Tree Company, 1995), Warren Manhart makes recommendations for about 50 different varieties chosen from more than 140 he has grown in the Pacific Northwest. In addition to detailed descriptions of history, growth habits, fruit characteristics and uses, and photos of each, he includes many personal observations and experiences.

When pressed for his favorite variety, Manhart explains that "...in western Oregon and western Washington alone, 226 cultivars of apples have appeared at fruit shows over the last 16 years and two people seldom have the same answer to the 'favorite apple' question..." Nonetheless, his personal top four are: Elstar, Spitzenberg, Braeburn, and Newtown.

Q: I understand that fall is the best time to plant new shrubs, but before selecting I'd like to expand my choices. Where can I get some new ideas?

A: *Plants That Merit Attention, Volume II, Shrubs* (Garden Club of America, Janet Meakin Poor and Nancy Peterson Brewster, editors. Portland, OR: Timber Press, 1996). This book focuses on "a select group of little-known shrubs which, by virtue of their superior garden worthiness, deserve to be preserved, propagated, promoted and be planted—shrubs that have been bypassed unintentionally in the parade of plants currently in vogue in our gardens."

Following this introduction is an alphabetical listing of several hundred species and their cultivars with descriptions that include landscape value and the location of specimen plants, many found in the Washington Park Arboretum or at other regional gardens. The book concludes with several appendices that give sources and lists based on notable characteristics, such as fall color or cultural requirements.

Q: What does it mean to naturalize bulbs? How can I find out more about using this technique?

A: "Naturalizing is the practice of situating bulbous plants in parts of the garden where they will flourish with little care—flowering and multiplying with abandon, or simply holding their own with complementary plants. Any well-chosen, well-situated bulb that behaves as a perennial may be said to have naturalized. Sheer numbers of bulbs don't necessarily guarantee a beautiful picture..."

So begins *Naturalizing Bulbs* by Rob Proctor (New York: Henry Holt, 1997). Subsequent chapters share much of the author's vast experience with growing bulbs in natural settings, not only for spring flowering but for year-round enjoyment. This entertaining text is then summarized in an excellent table showing preferred regions, best garden sites, and landscape considerations for bulbs from *Agapanthus* to *Zephyranthes*.

Brian Thompson is a librarian at the University of Washington Center for Urban Horticulture, Seattle.

In the Washington Park Arboretum

Summer into Autumn

BY JOHN A. WOTT, DIRECTOR

Enjoy the Autumn Colors

As the arboretum eases into fall, come visit the newer plants and collections that have been established over the recent seasons. Stay to enjoy the fall color throughout our 200 acres of woody plants, including the maple collections, which are among the largest in the United States.

Look at the fall color, for example, on a 100-year-old Japanese maple, which last May came from the Center for Urban Horticulture nursery (where it had been stored for 2 years) and can now be admired in its special place at the head of the Woodland Glen. The crew is carefully helping it to acclimate to its new home, and the fall rains should help it even more.

Research for the Gardener

Washington Park boasts over 100 cotoneaster species and cultivars, prized for their interesting leaf shapes and textures, their colorful berries, and spring flowers. The collection has not been evaluated for many years, so we are grateful for the assistance of Katy Bigelow, intern with Registrar & Collections Manager Randall Hitchin. Katy is helping update arboretum records and evaluating this large collection. Her findings will help in making decisions about which cotoneasters should be acquired in the future.

The arboretum is a great source of plant material. Recently, Doug Soltis and Larry Hufford, of the Washington State University Botany Department, collected specimens of so-called primitive taxa, including *Cercidiphyllum, Trochodendron,* and *Tetracentron.* This material will be used in their taxonomic research involving both traditional developmental studies and recently developed DNA sequencing techniques.

Root propagation may be easier for all of us due to the work of Lisa Soderquist, according to University of Washington propagator Barbara Selemon. Lisa completed her senior undergraduate project on using sub-irrigation as an alternative means of propagating difficult-to-root plants.

In May, 420 institutions received our *Index Seminum,* the international seed exchange list that we share. In fact, most new arboretum plants come through *Index Seminum.* Seed orders are now arriving in the arboretum from all over the world. Next year, we would like to offer a wider selection of native and wild-collected seed, and we are looking for volunteers who might like to assist with this project.

For researchers and propagators who wish to legitimately collect specimens directly from the arboretum grounds, Randall Hitchin has established a collecting permit system. If you need a collection permit or would enjoy helping with *Index Seminum,* contact Randall at 206-720-4917.

Youth & Families in the Arboretum

Last spring, over 1150 students participated in the Saplings Program, held for third-graders. More fledgling Spring Sprouts (younger than the Saplings) than last year attended a program coordinated with their school science curricula. This year they traced the life cycle of plants from flowers to fruit.

Branching Out, a free on-site after-school program, in partnership with two community centers, involved 35 inner-city youth in a 12-week spring session. Students, ranging in ages from 5–12, learned about botany, ethnobotany, and urban ecology while gaining a better appreciation for the importance of plants for humans and animals.

Arboretum Adventures, the new weekend program for children and families, has been a great success. Topics this year have covered painting, bird watching, and learning about trees.To learn more about programs with children and their families, contact Julie DeBarr, 206-543-8800.

THIS CLASSROOM NEEDS YOUR SUPPORT
WASHINGTON PARK ARBORETUM

WASHINGTON PARK ARBORETUM

PRESERVING A NORTHWEST TREASURE FOR THE 21ST CENTURY

The Washington Park Arboretum never ceases to delight us with its beauty, inspire us with landscape ideas for our own gardens, and enchant us with its tranquil walks and glorious vistas.

Indeed, this spectacular 200-acre museum of woody plants in the heart of Seattle is an invaluable educational and recreational resource with international horticultural significance. An outdoor classroom, it provides a hands-on, natural experience for present and future generations. From children of inner city schools to graduate students, landscape professionals and everyday gardeners, the Arboretum is at once a learning resource and a Pacific Northwest cultural treasure.

The Arboretum needs your support to continue to:

- Preserve and protect rare and endangered plants and precious ecosystems
- Ensure an enriching, educational environment
- Acquire new plants for regional and international study
- Instill an appreciation of the wonder of plant life for all ages
- Maintain the Arboretum as a splendid, tranquil retreat

Share the beauty and wonder of the Arboretum!

Arboretum Foundation memberships make wonderful, lasting gifts. Open doors to a greater appreciation of the beauty and value of plants with an investment in conservation, preservation and protection of nature.

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The Arboretum Foundation has funded projects to provide:

- Education and research
- Trail improvements and accessibility
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- Conservation
- Visitor enhancement

Specific projects have included:

- Renovation of four garden ponds and associated plantings
- Support of large tree management programs
- Construction of the Graham Visitors Center
- Support of the Japanese Garden
- Creation of major educational interpretive signage
- Garden enhancements including the Winter Garden, Azalea Way, Rhododendron Glen and the Japanese Maple collection

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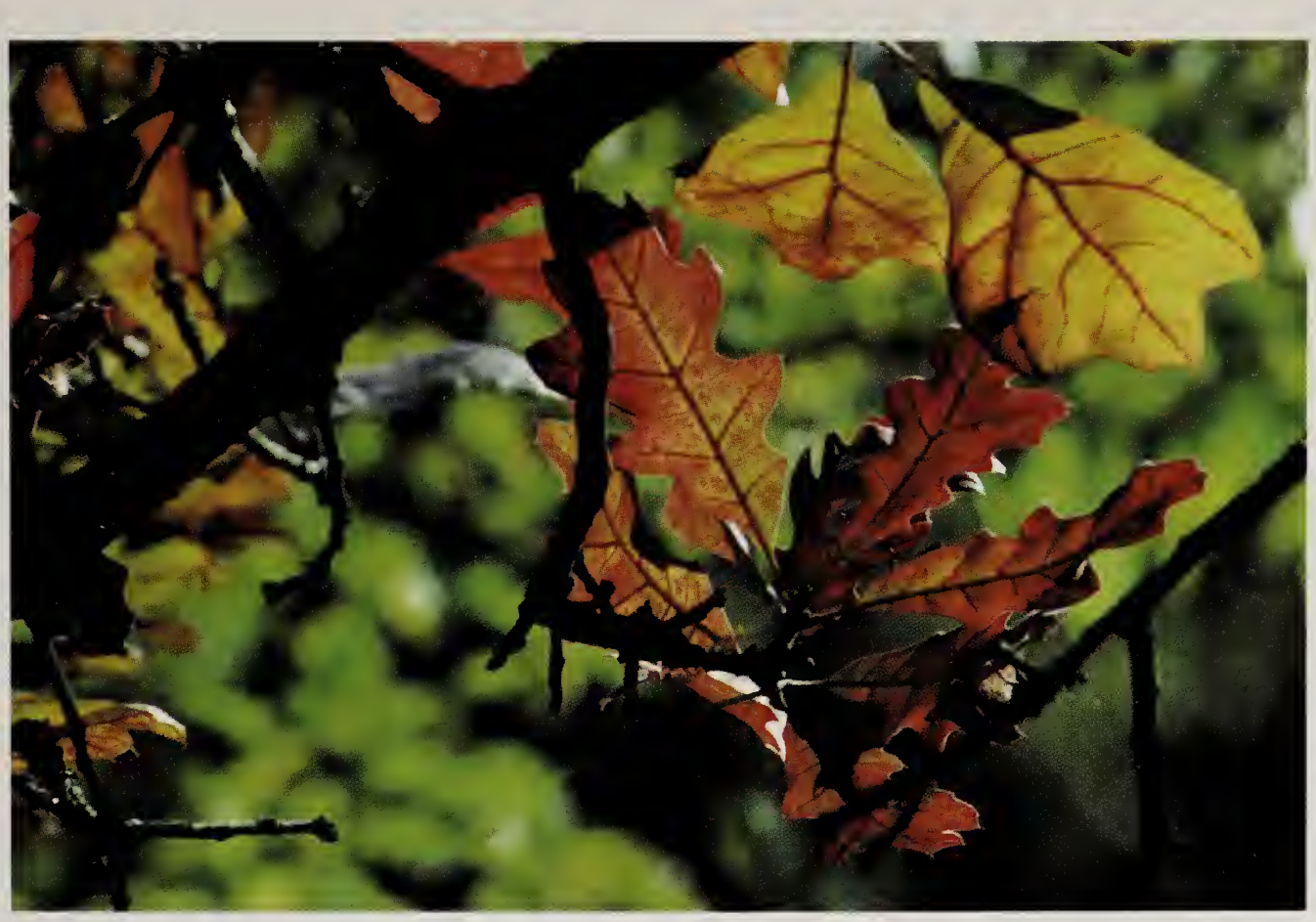
Share the beauty and discovery of the Washington Park Arboretum – a gift to enjoy all year long . . .

RIGHT:
Bush oak in fall color.
BELOW:
Saplings from Whitworth School's fourth grade learn about seeds, soils, water, and deer. Photos by Joy Spurr.



Volunteers Continue to Help

Arboretum horticulturist Christina Pfeiffer reports that volunteerism continues high at the arboretum. In April, 22 PlantAmnesty and International Society of Arboriculture member arborists volunteered a total of 103 hours pruning 18 trees along Lake Washington Boulevard East. This occurred while the boulevard was closed for the removal of the large poplar tree next to the Wilcox Bridge. Later in April, 150 volunteers (the most ever) participated in Earthworks Northwest, giving 525 hours. Participants included members of The Arboretum Foundation, CH2M Hill, Cub Scouts, Emeritus Corporation, Onyx Software, Parametrix, Inc., and neighbors. Nearly 100 members of the Northwest Girlchoir volunteered their time for their 12th annual choir work-a-thon, again weeding along Azalea Way.

John Wott is director of the Washington Park Arboretum and is active in the International Society of Plant Propagators. Dr. Wott recently presented a paper at the national conference of the American Association of Botanical Gardens and Arboreta (AABGA) on "Restoring the Arboretum Ponds," and he also chairs AABGA's Student Education Committee.

What in the Arboretum? Planning for the Future

Together, the arboretum and the community have been creating a "greenprint" for the arboretum's future.One purpose of the collaboration is to ensure the ongoing health of plants and to continue the outstanding maintenance of the collections.The goal for this 230-acre museum is to be even more user friendly for visitors in the 21st century. In the following interview, Director John Wott of the Washington Park Arboretum speaks with *Bulletin* editorial board member Ciscoe Morris about the arboretum's future plans. Their conversation (edited below) took place during the "Gardening with Ciscoe" radio show (Sunday morning, from 9–12 am, on KIRO AM radio).

"It's a people place and it's a plant place, and that's what we need to keep in mind."

Ciscoe Morris: A lot of people don't really know what the arboretum's master plan is.

John Wott: For the first time in 60 years, the arboretum can think, and look, and plan together—a vision of things that could be.

It's based upon interest studies that we've done in the last 3 years. We talked with neighbors and friends, and interest groups, and participants to find out what they like, what they need, and what they see is missing. They put all of their ideas on the table, and we're trying to figure out the best use of the arboretum.

CM: You were trying to tell me that there are only 2 bathrooms in the whole place to serve how many people?

JW: Well, we estimate that there could be 400,000 or 500,000 people a year coming through the arboretum. We have 2 restrooms and 2 drinking fountains for those kind of services. There just aren't that many visitor amenities now. Certainly we don't want to overdo it, but we need to provide those kinds of things, in particular for a lot of the children in groups that come through.

"...we're not going to change the flavor of the arboretum, we're just going to make it a little more amenable—even nicer for people."

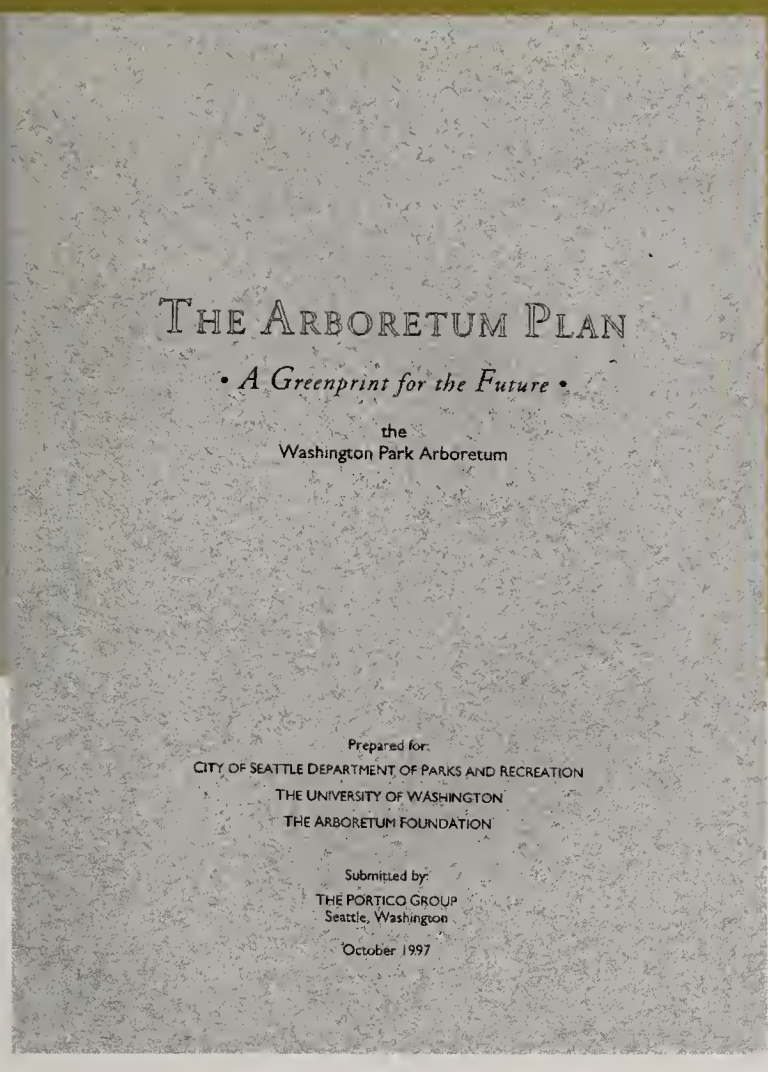
CM: That makes sense. It seems to me that we're not going to change the flavor of the arboretum, we're just going to make it a little more amenable—even nicer for people.

JW: Of course. When I say to somebody in Seattle that I work at the arboretum they go, "Oh, I love the arboretum." And then I say, "Well, what do you love about it?" They always reply that it really is that naturalistic flavor. It's the matrix of big trees—your ability to go around the paths and discover new things when you come around the corner. And that's exactly what we want to improve and preserve.

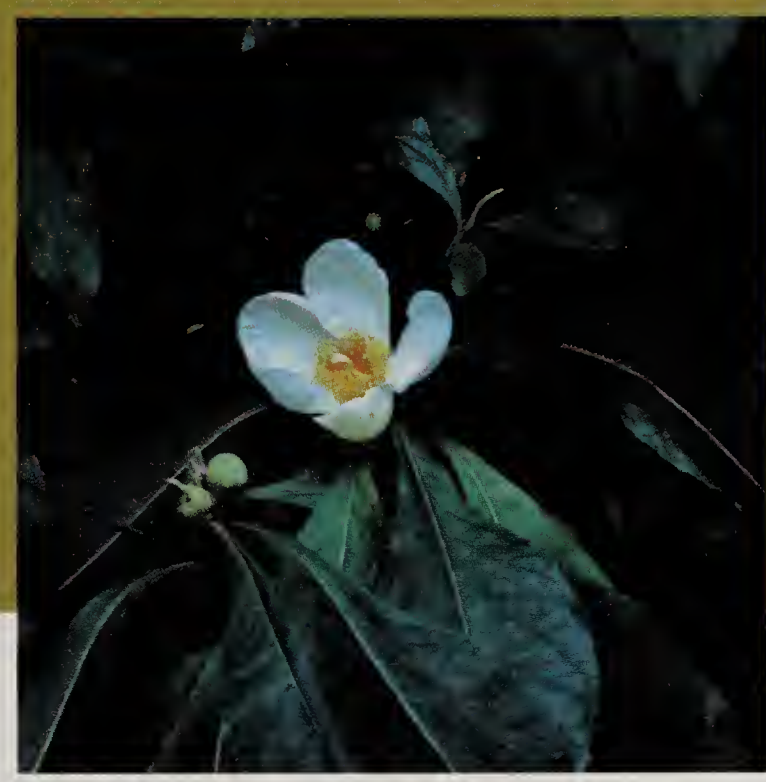
"...everyone needs to be able to enjoy this community resource."

But we have to understand that Washington Park is a living system. Plants sprout, they grow, they mature, and they die—just as we do. And we haven't paid a lot of attention to a lot of these plants, particularly the native plants. And we certainly have collections that are aging at 40 or 50 years. And they need attention.

We'd like to take a look at making them prettier and more enjoyable for everyone. One hundred years ago, gardens—arboreta and botanical gardens—were built for academics and researchers and those people who were really the "plant nuts." We want to make sure that we have things for the "plant nuts," but *everyone* needs to be able to enjoy this community resource—even if it's just a common walk on a Sunday afternoon, evening, or morning. That's what it's all about. It's a people place and it's a plant place, and that's what we need to keep in mind as we plan for the future.



Future generations, such as this Branching Out group from Yesler Community Center, are a focus of the arboretum and its master plan. Find review copies of "The Arboretum Plan—A Greenprint for the Future" at the Graham Visitors Center, the Elisabeth Miller Horticultural Library, and at Seattle Public Library's main and Montlake branches.



Caring for, maintaining, and adding to the collections are part of the future plans of the arboretum and the community. Conservation is also a major goal. A good example is Franklinia alatamaha *(above), known for simultaneous fall flower and fall leaf color. This tree has not been found in nature since 1790, but find it along Arboretum Drive East (11-6E) and along Azalea Way (38-B), using an arboretum map. Photos by Joy Spurr.*

Where in the Arboretum? Plant Donations from Nan Ballard's Collection

by Randall Hitchin

Christina Pfeiffer

Enkianthus campanulatus *'Albiflorus' at the Rhododendron Glen pond.*

Occasionally, Washington Park Arboretum collections are filled out by donations of unusual or choice plants from individuals with exceptional gardens. One of the most recent of such donations is by Nan Ballard, long-time Arboretum Foundation member, from her Issaquah garden—one of two gardens to discover the hybrid now known as *Garrya* x *issaquahensis* 'Pat Ballard'. Most of Nan's donations, except *Daphne blagayana,* are located in Rhododendron Glen. The daphne is near Azalea Way, west of the Witt Winter Garden. Use an arboretum map to pinpoint each plant by the grid designation after each entry.

Enkianthus campanulatus 'Albiflorus' is a small deciduous shrub that is white to pale green, with urn-shaped flowers and good fall color:13-4E.

Gaultheria nummularioides is an evergreen dwarf shrub featuring small, white, urn-shaped flowers: 13-4E.

G. cuneata is similar to the species above. This one grows taller, to 1 foot. *Cute* is the adjective that comes to mind for both of these species: 13-6E.

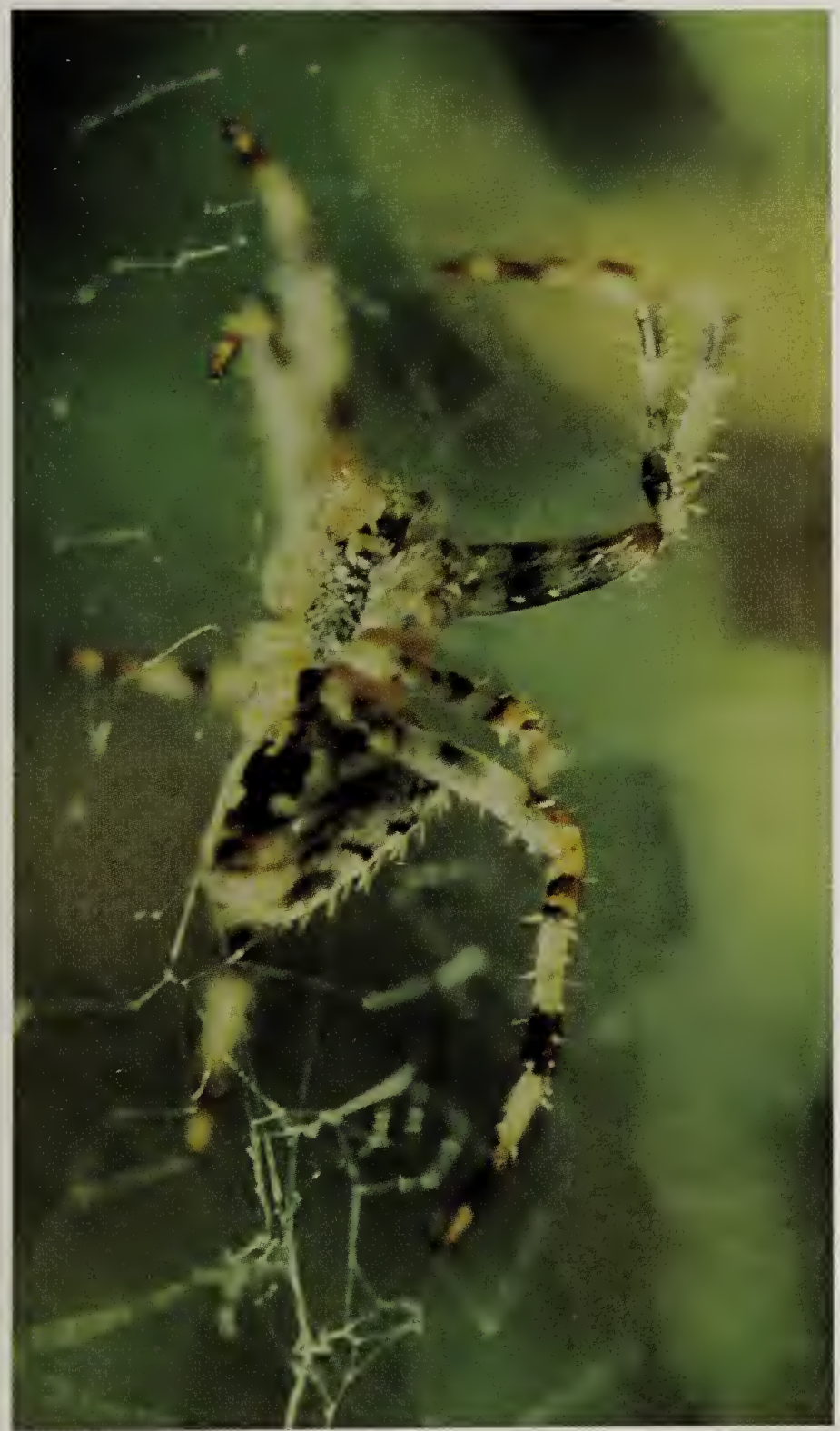
Rhododendron williamsianum (dwarf form) is typically a 2–3 foot evergreen shrub with candy-pink, bell-shaped flowers. Grown from seed, after many years it is still less than 1 foot high and 2 or 3 feet wide. Other than its size, this clone appears to be typical of the species: 13-4E.

Vaccinium vitis-idaea (lingonberry), a dwarf evergreen shrub, can reach 1 foot high and wide. It produces small, white-to-pink, urn-shaped flowers, later producing bright red edible berries that are prized (at least by some): 13-6E.

Chamaedaphne calyculata (leatherleaf or Cassandra). This small evergreen shrub has lance-shaped leaves that are rust-colored beneath. It reaches 4 feet tall. Small, white, urn-shaped flowers are held in racemes: 13-6E.

Daphne blagayana, an evergreen shrub to 1 foot high, spreads by rhizomes. The fragrant flowers are in terminal clusters of 20 or more: 33-1W.

Randall Hitchin is the Registrar/Collections Manager, Washington Park Arboretum.



TOP:
Lady beetle larva.
ABOVE:
Spider.
RIGHT:
A ladybug eating an aphid.

You Gotta Love These Bugs

Before next spring, learn to identify insects that help your garden.

BY JAMES "CISCOE" MORRIS

Incredible numbers of beneficial insects and spiders eat or parasitize many of the harmful insects that raise havoc in our gardens. Learning about these good guys and how to identify them helps reduce the need

to use pesticides. It also makes gardening more interesting.

Good bugs are fascinating critters. Here are some of my favorites and a description of why you want them in your garden.

Lady beetles (Coccinellidae family) are the best known beneficial insect, and most gardeners appreciate their talent for munching copious numbers of harmful insects. Their eggs are laid in clusters and resemble yellow or orange footballs standing on end. Eggs hatch in 3 to 5 days, larvae feed for 2 or 3 weeks, and adults emerge from pupae in 7 to 10 days.

The larvae resemble fast-moving alligators. They come in a variety of colors and sizes, but all are ferocious predators of soft-bodied insects such as aphids, mites, and scale larvae. Pupae are 1/4-inch bumps on leaves or bark. Interestingly, after lady beetles emerge from pupae, it takes about an hour before spots occur.

Purchasing lady beetles for release in the home garden is a nice favor for your neighbors but not for you. Lady beetles are programmed to immediately fly 2 to 10 miles away, where they land, eat someone else's aphids, and begin to raise a family. The larvae, however, cannot fly away. So if you are fortunate enough to have a friend with extra lady beetle larvae, take them home. If not, the good news is that there are plenty of lady beetles around, and they are attracted to yards where gardeners use environmentally friendly gardening techniques. The adults eat pollen, in addition to soft-bodied insects, so grow lots of composite flowers, such as sunflowers or yarrow, to attract them to your garden.

Ground beetles (Carabidae family) were nicknamed the "eek-squish bug" by entomologist Sharon Collman. Eek-squish bugs are those big (1-inch long), black, iridescent beetles that come running out when you pick up a rock or board in the garden. The name was inspired by the instant reaction of many gardeners to scream and stomp, resulting in a rather flat, wide, and very dead beetle.

Ground beetles are like lions in the jungle because they hunt at night and use their huge jaws to nab and gobble their prey. There are more than 2,500 species of ground beetles worldwide. In Western Washington, most eat slug eggs, cutworms, and assorted larvae.

One ferocious walnut-colored ground beetle, commonly called the snail eater, can take on a 2-inch slug. It is really exciting to see the snail eater devour the slimy critter, even though they have bad breath afterwards.

Larvae of ground beetles are also tremendous predators. Occasionally, larvae attack night crawlers or worms. Do not be concerned: The typical garden has about 350,000 worms, so you can spare a few to feed these wonderful predators. Slug baits that have weevil killer in them, and weevil sprays, such as Orthene, often kill ground beetles and should be avoided. Also, beer traps used to drown slugs should always be placed so that the tops of the traps are at least 1 inch above the soil to prevent ground beetles from falling in and drowning.

Hover flies or Syrphid flies (Syrphidae family) are easy to recognize. The adults are often seen hovering like little helicopters moving from flower to flower. Hover flies wear a clever disguise in that they resemble bees, so hungry birds will not eat them for fear of getting stung. Syrphid flies are terrific pollinators; however, that is not their greatest value. The adults lay eggs on aphid-infested leaves, and within 2 or 3 days, a tiny green maggot hatches. These little maggots are blind, so they have to tap their head around until they find an aphid. Then a hook comes out, grabs the aphid, and pulls it against its mouth to suck the juice right out. Syrphid fly maggots have huge appetites often clocked at an aphid per minute.

The maggots are tiny when they first hatch, but after 3 or 4 weeks of feeding, they resemble little samurai wrestlers and become almost too fat to balance on a leaf. Then they drop to the soil where they pupate, emerging as adults in about 2 weeks. Syrphid flies are able to produce 2 to 4 generations per year. They can really clean up a large infestation of aphids, so do not spray if you see any because they will probably take care of the problem. Pollen- or nectar-rich plants such as yarrow, lovage, and fennel help attract syrphid flies to your yard.

Wasps make most folks think of yellow jackets. Although all yellow jackets eat harmful insects such as caterpillars and therefore are beneficial, some are pests at picnics and capable of delivering powerful and repeated stings. Numerous kinds of small wasps do not sting, however; instead of a stinger, they possess an ovipositor used to lay an egg inside the body of an aphid, caterpillar, or other pest. After the egg hatches, the maggot parasitizes the host by eating the insides. The wasp maggots actually pupate within

the aphid's body. Then the adults cut an exit door and crawl out.

When you see lots of swollen silver- or golden-colored aphids, it means that wasp parasites are at work. Keep a magnifying glass handy in case you get to see the wasp emerge from the aphid. Do not spray or you will kill the wasp that lays the golden egg!

Spiders are much-maligned critters, though only one seriously poisonous spider, the hobo spider, is found in the Pacific Northwest, and it rarely is found in the garden. Most experts consider spiders the most beneficial organism among your plants. Not only do they consume larger numbers of troublemakers than any other creature in the garden, they also have a varied diet, and go after a wide range of pests from fleas to moths, and everything in between. One of the best ways to attract them is to use a loose mulch such as grass clippings, leaves, or wood chips.

Lacewings (Chrysopidae family), another beneficial insect, have an interesting relationship with ants and aphids. When you notice a large population of ants in your trees or shrubs, they are most likely feeding on the sticky honeydew that is excreted by the aphids. Ants occasionally kill lady beetles and other beneficial larvae to protect their food source from attack.

Lacewings are voracious predators that have evolved ingenious methods to outwit ants. The adults are fragile green or brown insects with big golden eyes, which reflect light, and transparent wings held over the back, similar to a church roof. Each lacewing egg is laid on the end of a stringy stalk. This serves two purposes: First, it protects the eggs because ants cannot find them. Second, placing each egg on its own string prevents the lacewing larvae from eating each other the minute they are born.

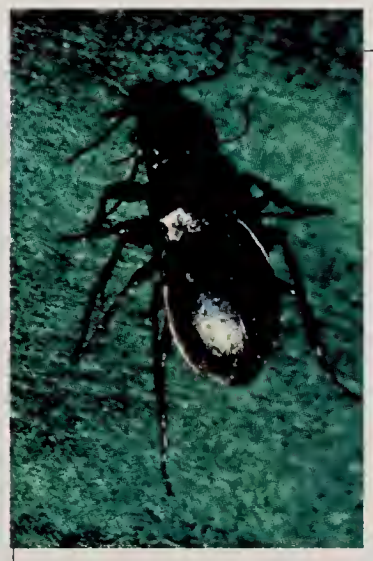
The brown or gray lacewing larvae are spindle-shaped with huge sickle-shaped jaws. Within seconds of hatching, the larva runs down the string. Before any ants see it, the larva grasps an unsuspecting aphid with its huge jaws, picks it up, and sucks the juice out of it like a living milkshake. Now comes the *coup de grace.* The lacewing larva does not just toss the empty aphid body away. The larva throws the sticky aphid backward and hopes that the aphid will stick to its back. Quickly, before the ants see it, the larva will catch a few more aphids, and these also end up on their backs. Now the larva is able to sneak right by the ants. The ants look at the aphids and say, "Why are those silly aphids sitting on top of each other?" They do not see Mademoiselle Lacewing in her clever disguise underneath. No predator is more clever or effective at getting by ant defenses than lacewings.

To attract lacewings to your garden, plant nectar- and pollen-rich flowers, such as sweet alyssum, yarrow, fennel, and dill. Lacewings can be purchased and used effectively to control aphids and other pests.

These are just some of the beneficial insects to encourage in the home garden. Some tips will help you recognize the others. First, good bugs are generally fast, so they can catch and eat the bad bugs. Second, as we have seen, good bugs also often have big jaws used to nab and scarf their pray. Be a detective: Take time to watch. A bug that is not eating your plant might be eating others that are. Often the nastiest looking bugs end up being the best helpers. Remember that an unfamiliar looking creature may be a beneficial larva. Everyone knows the lady beetle, but far fewer people recognize the lady beetle larva.

You will really get to know the life in your garden if you pay attention to it, and before long you may just find that your own garden puts on a better show than anything on TV.

James "Ciscoe" Morris is horticulturist at Seattle University. He lectures widely and can be heard weekly on his radio show for KIRO-AM, Sunday at 9:00 AM.



Bug Sightings

Find beneficial insects around your garden or house all year long.

Fall: ground beetle adults (pictured); lacewing adults; wasps.

Winter: lady bugs (in houses or hibernating in woods).

Spring: ground beetle larvae, adults; lacewing pupae, adults; hover fly larvae, adults; lady bug adults, eggs, larvae, pupae; spiders; wasps.

Summer: ground beetle larvae, adults; hover fly larvae, adults; lacewing pupae, adults; lady bug adults, eggs, larvae, pupae; wasps.

This affable member of the British Metropolitan police works at New Scotland Yard, which is not a garden.— Drawing courtesy of a Scotland Yard Internet site.

A Gardener's Lexicon

Gardening by the Yard

Come out of the yard into the garden!

BY ARTHUR R. KRUCKEBERG & MARY ROBSON

Through fall, many Americans are outside doing *yard work,* while others are *gardening.* Our exploration of horticultural terms continues, as we examine the origins and meaning of *yard* versus *garden,* and as we correct a flagrant and common misuse.

All over America, the word *yard* stands for the cultivated open space around a dwelling. There's little distinction between *yard* and *garden*, and *yard* appears ubiquitously as: back yard, front yard, yard sale, and, yes, yard work. The English, who have made gardening and ornamental horticulture a sublime art form, would never say "yard" where they intend to garden.

The confusion about meaning reflects the tangled history of the English language:

Yard derives from the Anglo-Saxon *geard,* meaning enclosure, residence, or garden. *Garden* began as the Old French *gardin* and Middle English *gardyn,* both meaning fence or enclosure.

Both yard and garden are rooted in an old, early syllable *gher,* to enclose. Tradition and custom gradually altered their usage. The words were, however, vital. Enclosures marked the difference between civilization and wilderness: Having a geard was no small matter.

Think of *yard* as signifying utility and of *garden* as conveying productiveness or pleasure. One usage reflects a

Washington Park Arboretum's recently installed New Zealand Garden is easily viewed from its site beside Arboretum Drive East. The garden is designed to show how plants from New Zealand—which has a Mediterranean-like climate similar to ours— work in western Washington gardens. The rich background haze of fall foliage is Cercidiphyllum japonicum.— *Photo by Joy Spurr*

Teutonic briskness: *yard*. The other, however, reflects the romantic elegance of the *garden*.

In England, one may quarter horses or cars in a yard, exercise prisoners in a yard, or store lumber in a yard. Never would the English cultivate plants in a yard.

After all, Scotland Yard is hardly a garden, but has, rather, taken its name from the walled ground where the confined once walked in chains. American yards can be used for making up and switching trains; for keeping animals, as in hogyard; or for penning in students, as in Harvard Yard.

However, the *Unabridged Oxford English Dictionary* notes that in US usage, but not in English speech, a yard is "a piece of enclosed ground of moderate size, often adjoining a house and covered with grass, or planted with trees; a garden." Somewhere in a linguistic twist, Americans fused *yard* and *garden*, just as they had been combined at the dawn of language. Does that make us in the United States a shade more uncouth, a bit more illiterate, or just different?

That's for others to decide. But if *yard* persists in replacing *garden* in the United States, why not be consistent? Should one say Northwest Flower & *Yard* Show, vegetable *yard*, and *yard* bench? The *rock garden* then becomes *rock yard*, with all its connotations of incarcerated souls heaving dense igneous matter.

All we ask here is that gardeners call their cultivated plant-space a *garden*, not a *yard*. Try out the word *garden* for *yard:* yard tools, back yard, plants for the yard, and Lo! A banal linkage becomes aesthetically correct...even divine.

To change the habitual use of words is not easy. Even if led by the devotees of *gardening* (not *yardening*), alteration may be slow. The change may even be as snailish a transformation as the effort to call our native aroid *(Lysichiton americanum)* a *swamp lantern* rather than the miserable and inappropriate *skunk cabbage*.

So, to all of you who cherish the pursuit of gardening: Abandon the word *yard*, and start to *garden* with dedication.

Arthur R. Kruckeberg is professor emeritus, University of Washington.

Mary Robson is the Washington State University extension agent for King, Pierce, and Snohomish Counties.

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Thank You

The Washington Park Arboretum Bulletin is pleased to be the winner of the 1998 TREEmendous Seattle Friend of Trees Media Award.

Congratulations to the other winners, including Duane Kelly, past president of The Arboretum Foundation, and founder of the Northwest Flower & Garden Show.

For Further Information

Putting Plants into the Ground

BY VALERIE EASTON

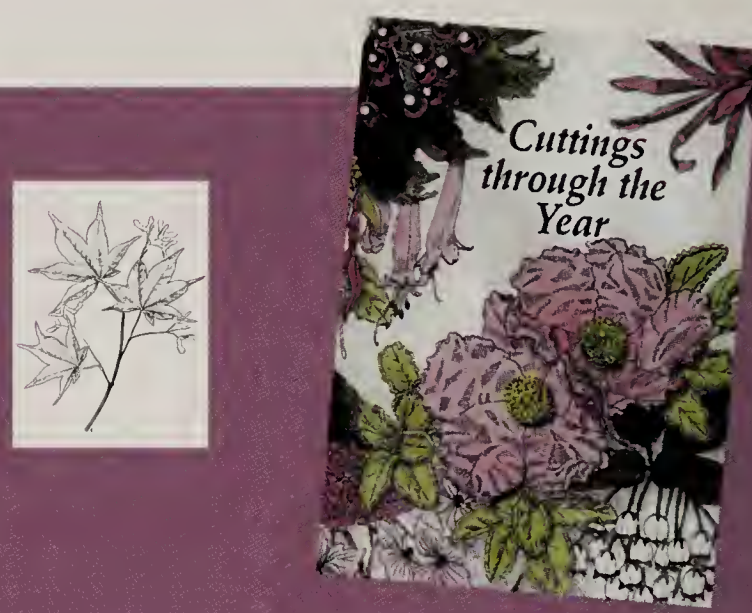
How to actually arrange plants in the garden—in what order and pattern to put them into the ground—is one of the most challenging tasks in gardening. All of the physical requirements and aspects of the plants must be considered: growth habit, eventual size, type of soil, sun, water, wind, and disease resistance. But it is the gardener's artistry in putting the plants together that you first notice when visiting a garden. The health of the plants is only one of the reasons that plantings please the eye: Color, layering, symmetry, textures, fragrance, and cohesiveness all play a major part in whether or not a garden is an exciting or boring experience.

Autumn is not only an excellent time to put in new plants but also to transplant and rearrange. Into October, the soil remains warm enough to encourage root growth, with sufficient rain to keep new plants happy. Most important, the mistakes of the past season are still fresh in one's mind. In spring, self-delusion is possible; it has been months since plants have smothered each other or bloomed side by side in clashing colors. Early in the season, it is easy to pretend you have space for more plants. At the end of the season, there is no room for such escapism—it is time to add, subtract, and plot an even more rewarding garden for next year.

Below are a few of the books that go beyond plant selections, hardscapes, watering systems, sight lines, and pruning, to tackle the difficult task of how to arrange plants to please the eye.

Schenk, George. *The Complete Shade Gardener.* Boston: Houghton Mifflin, 1984. Schenk's chapter entitled, "The Art, the Science and the Delight of It" is one of the most useful pieces ever written on making a garden. He begins, "Let me guide you through an adventure that will inevitably bring you this same bliss—the making of your own shady retreat." Sun or shade, the steps he takes you through—complete with before, after, and in-the-process photos—document the creation of a little garden. He shows his mistakes and how he starts over, adds rocks, and steps back again and again to look closely at scale and texture. It is fascinating, complete, and worth reading many times.

Dillon, Helen. *Garden Artistry: Secrets of Designing and Planting a Small Garden.* New York: MacMillan, 1995. Plentiful and beautiful



Where in the Arboretum?
Cuttings from the Pat Calvert Greenhouse & from Your Garden

As you enjoy the arboretum's fall colors this year, you might also want a start of some arboretum plants. If you do, write down the name and numbers on each plant's accession tag. Then call the all-volunteer Pat Calvert Greenhouse and ask a volunteer to make a cutting for you. Or visit the Calvert Greenhouse on Tuesdays from 10–12 to see if a mature start is for sale, and plant it now. Call 206-325-4510 for information.

Cuttings through the Year
Joy Spurr, ed. Seattle: The Arboretum Foundation. 50 pages. 1995, 4th printing. © 1980. Cover art by Jean Emmons; photos by Joy Spurr. Available: Graham Visitors Center Gift Shop.

Fall and winter are the best times for hardwood, softwood, and some root cuttings of many species. Spurr's book covers what to cut and when, using which method. She also suggests potting media and when to transplant. Photos illustrate the lessons.

color photos and a personal writing style make this book a cut above most gardening sagas. Dillon loves plants and collects a great number and variety of them, and here describes how she imposes some order on this vast accumulaton. Her main theme is: "You can get away with placing umpteen plants higgledy-piggledy provided they are contained within strict, architectural lines." This is a familiar idea in British garden writing. I like best the description of how she undertakes garden work: "My method is to wait until some part of it annoys me and then take action." I agree with her comment, "By late summer all the mistakes show."

Billington, Jill. *Planting Companions: Winning Plant Combinations for Every Garden.* New York: Stewart, Tabori, and Chang, 1997. Billington looks at how to arrange plants from every possible angle: texture, pattern, form, shape, color, natural compatibility, growth, size, and habit. The photos by Clive Nichols dazzle and are supplemented by color illustrations, detailed planting plans, and photos or drawings showing first, second, and third years of development. This is a book to study in detail.

More Reading

Cox, Jeff. *Plant Marriages: Why Plants Look Good Together.* New York: HarperCollins, 1993.

Harper, Pamela. *Color Echoes: Harmonizing Color in the Garden.* New York: Macmillan, 1994.

Keen, Mary. *Creating a Garden.* New York: Simon & Schuster, 1996.

Stevens, Davis, and Ursula Buchan in association with the Royal Horticultural Society. *The Garden Book.* London: Conran Octopus, 1994.

Verey, Rosemary. *The Art of Planting.* Boston: Little Brown, 1990.

Freelance writer Valerie Easton writes for magazines such as *Rebecca's Garden, Fine Gardening,* and *Better Homes & Gardens.* She is the library manager for the Elisabeth C. Miller Horticultural Library, University of Washington, Seattle (veast@u.washington.edu).

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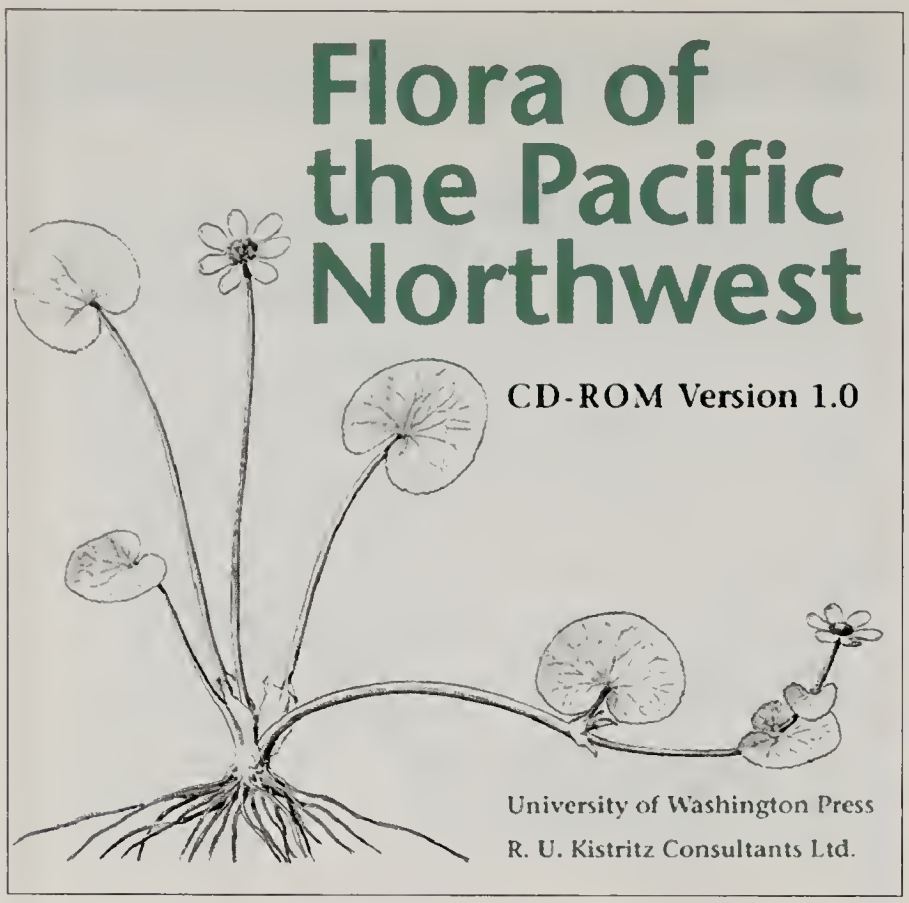


Flora of the Pacific Northwest
CD-ROM Version 1.0.
R. U. Kistritz Consultants, Ltd.
Seattle: University of Washington Press, 1997. $50.00.

Pacific Northwest native plant enthusiasts have long revered the plant identification keys in "Hitchcock,"the field name for the five volume *Vascular Plants of the Pacific Northwest* by C. Leo Hitchcock, Arthur Cronquist, Marion Ownbey, and J.W. Thompson (University of Washington Press, 1955–1969) or the later single volume compilation (*Flora of the Pacific Northwest* by Hitchcock and Cronquist, University of Washington Press, 1973).

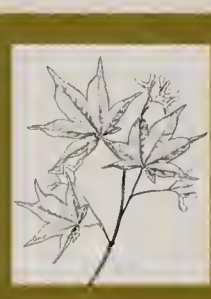
Now available is a CD-ROM that draws on the botanical information of the latter and is described by the publisher as "a companion to the plant identification keys in the book."

The term *companion* is critical, as the CD-ROM neither includes the identification keys nor the botanical descriptions found in the print version. What it does provide is the basic taxonomic information (family, genus, species, variety, and authority) plus common names, habitat, and range for 4,730 species and related taxa.

The format is easily searched or organized as needed. For example, you could identify all the members of Iridaceae that are found in open woods or meadows in British Columbia or all plants that have the common name sword fern. This information can then be customized into a report and printed out or saved as a separate file. Also incorporated and available for printing are the illustrations found in the five-volume print set.

Unfortunately, changes in nomenclature since the publication of the one volume set (1973) have not been included on the CD-ROM. Nevertheless, this new work will still interest those who extensively use the print version yet wish for more flexibility in how to access and use this great resource.—*Reviewed by Brian Thompson*

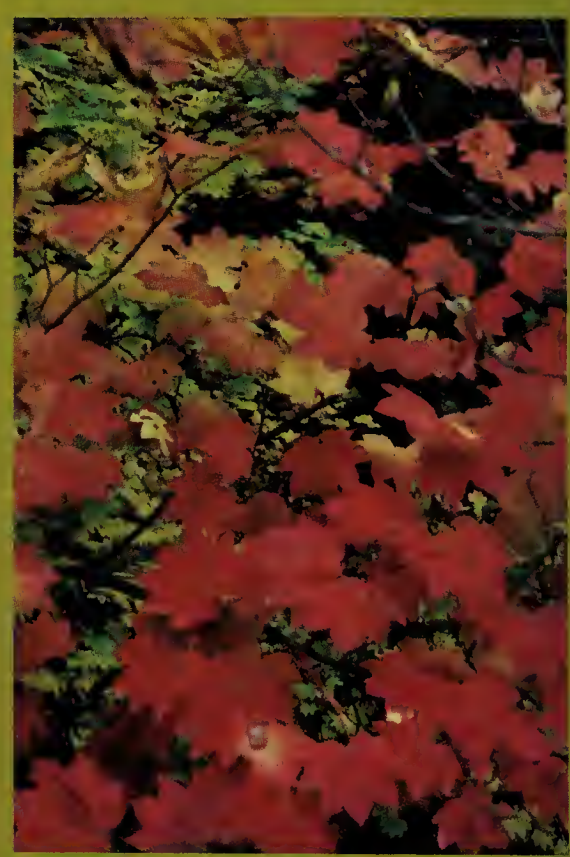
Brian Thompson is a librarian at the Elisabeth C. Miller Library, Seattle.



Where in the Arboretum? Vine Maple and the Native Matrix

Pacific Northwest native woody plants are popular for their beauty in nature and as drought-tolerant, cold-resistant, and disease-resistant additions to the garden.

In addition to the exotic woody plants for which Washington Park Arboretum is known, there is a matrix of native trees and shrubs that grow throughout the 200-acre living museum. Below is *Acer circinatum* (vine maple) in luxuriant fall color. They reach up to 35 feet high, with small purple flowers in spring. Find specimens throughout the arboretum.



Joy Spurr

The Well-Tended Perennial Garden—Planting and Pruning Techniques
Tracy DiSabato-Aust.
Portland, OR: Timber Press, 1998.
Hard cover, $29.95.

Over the last few years, there has been an explosion of interest in perennial gardening in the Pacific Northwest, in large part due to new gardeners being bamboozled by shiny catalogs touting perennials as long-lasting, trouble-free, and low-maintenance (you only have to plant them once, right?).

At some point, we have all discovered, or are about to, that this is not quite the case; indeed, most neophyte gardeners have had to learn by their mistakes or pour over countless, often contradictory, texts for illumination as to how to tame the monster they have unwittingly created.

This book has something for everyone, regardless of level of experience. The author's bachelor's and master's degrees in horticulture from Ohio State University and over twenty years of professional experience in the United States, Canada, England, and Belgium have laid the ground for a useful, well-thought-out volume. Although based in Ohio, DiSabato-Aust urges her readers to tailor her recommendations for their own climate zone(s).

The illustrations are simple and clear; the before and after photographs are even more so.

When it comes to the question of readability, I have some concerns. While the book is thankfully free of gush and preciousness, it also lacks a certain sparkle or wit. The overall style is rather dry, but the lessons and insights contained are invaluable. It is, as Roy Lancaster would say, "a good do-er" and as such belongs on the bookshelf of all but the most experienced or opinionated gardeners.—*Reviewed by Brian Chambers*

Born in England, Brian Chambers grew up in a family of keen gardeners. In the last ten years, he has sold perennials, shrubs, and trees at some of the better-known Seattle nurseries, and is currently very happily in charge of indoor plants at Molbak's Seattle Garden Center in the Pike Place Market. Brian is a master gardener.

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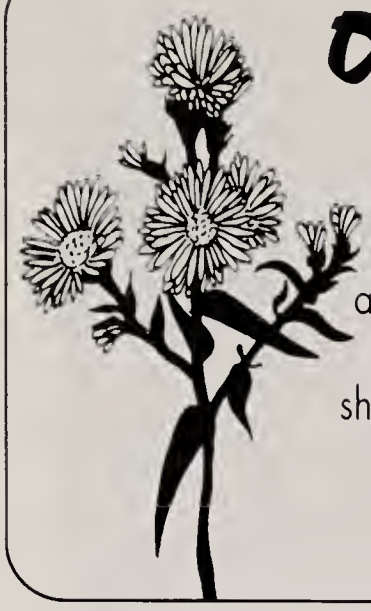

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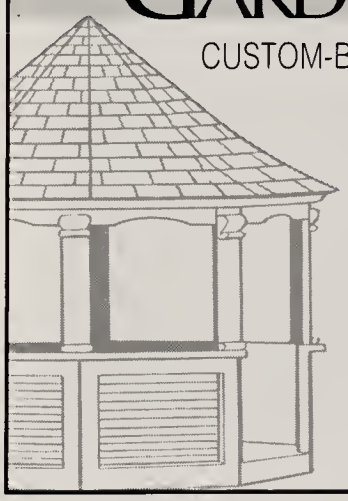

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